

DISTRIBUTION AND THICKNESS OF UNCONSOLIDATED DEPOSITS

The distribution of unconsolidated deposits was largely controlled by bedrock topography and the movement of glacial ice and meltwater. A description of the seven zones shown on plate 2 is given below.

Zone 1—Deposits that are less than 5 feet thick (zone 1) are the second most extensive in the county. This zone consists mostly of till and can be found (1) on the top of interfluvial or broad bedrock ridges, locally known as the "backbones," such as the interfluvial in the Finger Lakes National Forest in the northeastern part of the county, (2) in extensive upland areas, especially the tops and north slopes of the relatively rugged hills of the Allegheny Plateau (see inset map, pl. 1) in the western and southern half of the county, (3) on many small upland stream channels, such as the Seneca River, where the unconsolidated deposits have been eroded by recent stream incision, (4) on the overstepped walls of the Seneca Lake trough, (5) along narrow valley walls that were oriented roughly parallel to the direction of ice flow, and (6) on overstepped walls of through valleys, such as Texas Hollow in the eastern part of the county. Through valleys are flat-floored valleys between adjacent drainage systems that flow in opposite directions; the axis of the valley is roughly parallel to the direction of ice flow and underwent concentrated scouring and subsequent deposition of glacial drift.

Zone 2—Unconsolidated deposits that are from 5 feet to less than 25 feet thick are the most extensive zone in the county. This zone consists primarily of upland till. Some small, narrow, lateral moraine ridges are present in the zone. Deposits in this zone are extensive in the uplands of both the Allegheny Plateau and the Finger Lakes region. (See inset map, pl. 1.)

Zone 3—Unconsolidated deposits that are from 25 feet to less than 50 feet thick consist of a variety of glacial sediments. For example, ice movement and scour over northward facing slopes of hills deposited relatively thick till on the southward-facing slopes to form "till shadows" (Coates, 1966), and many upland streams deposited sand and gravel to form deltas along the edges of a proglacial lake in the Seneca Lake trough. Glacial meltwater also deposited kame deltas on the sides of, or in front of, the retreating ice. Small, narrow ridges (till and kame moraines) formed in parts of the uplands in the Finger Lakes region where sediments (mostly till and poorly sorted sand and gravel) were deposited at the ice front, and a wide belt of thin upland ground moraine was deposited in the northwestern part of the county. Small headwater stream valleys contain outwash, till, fine-grained lake deposits, or alluvium. The edges of major valleys filled with thick drift are also mapped as zone 3 where the drift thins toward the valley walls.

Zones 4 and 5—Unconsolidated deposits that are from 50 feet to less than 75 feet thick (zone 4) and 75 feet to less than 100 feet thick (zone 5) are mostly in major valleys but also are found in some hanging-delta and moraine deposits in the uplands of the Finger Lakes region. These valley-fill deposits consist mostly of glaciofluvial sand and gravel in southward draining stream valleys and mostly lacustrine fine sand, silt, clay, and till deposits in northward draining valleys.

Zones 6 and 7—Unconsolidated deposits that are from 100 feet to less than 200 feet thick (zone 6) and those that are 200 feet thick or greater (zone 7) are found only in broad valleys. Most of these valleys contain 100 to 200 feet of sediments. Exceptionally thick deposits, more than 200 feet thick, are found in the Catherine Creek Valley south of Seneca Lake, and at the Valley Heads moraine at the south end of Cayuga Lake in the southeastern part of Schuyler County. Salt wells drilled at the south end of Seneca Lake penetrate more than 800 feet of unconsolidated deposits, mostly lacustrine deposits, overlying bedrock (Mullin and others, 1991). Because the walls along the Catherine Creek Valley are extremely steep, the zone intervals are too narrow to depict at the map scale shown; therefore, not all zones in this area are delineated.

REFERENCES CITED

- Calkin, P.E., and Muller, E.H., 1992, Timing of New York glacial and nonglacial episodes, in Cadwell, D.H., ed., Proceedings of the symposium on glacial geology, Schuyler County, New York, State University of New York at Oswego, p. 41-43.
- Coates, D.R., 1966, Glaciated Appalachian Plateau—till shadows on hills: Science, v. 152, p. 1617-1619.
- Hertz, F.P., 1988, Application of seismic-refraction techniques to hydrologic studies: U.S. Geological Survey Techniques of Water-Resources Investigations, Book 2, Chap. D2, 86 p.
- Miller, T.S., 1990, Hydrogeology of Schuyler County, New York: U.S. Geological Survey Water-Resources Investigations Report 90-4073, 1 sheet, scale 1:48,000.
- Mullin, H.T., Wellner, R.W., Petrucci, J.L., Hinchey, E.J., and Wanzer, Steven, 1991, Subsurface geology of the Finger Lakes Region, in Ebert, J.E., ed., New York State Geological Association Field Trip Guidebook, 63rd Annual Meeting, October 1991: Oswego, N.Y., State University of New York at Oswego, p. 1-54.
- Paglia, P.S., 1975, Soil survey of Schuyler County, New York: U.S. Department of Agriculture, Soil Conservation Service, 192 p.
- Scott, J.H., Tibbets, B.L., and Burdick, R.G., 1972, Computer analysis of seismic-refraction data: Bureau of Mines Report of Investigations 7595, 95 p.

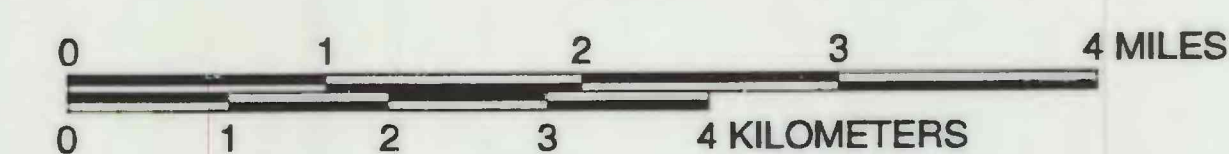
EXPLANATION

ZONE	APPROXIMATE THICKNESS OF UNCONSOLIDATED DEPOSITS, IN FEET
1	Less than 5
2	5 to less than 25
3	25 to less than 50
4	50 to less than 75
5	75 to less than 100
6	100 to less than 200
7	Equal to or greater than 200

- WELL OR TEST BORING**
- 21 Terminates in unconsolidated deposits. Number indicates minimum sediment thickness, in feet.
- 20 Terminates in bedrock. Number indicates approximate sediment thickness, in feet.
- 977 Lithologic data questionable. Data reported by Miller (1990) are inconsistent with new information and thus were not used for determining the thickness of unconsolidated deposits.

B—B' LINE OF HYDROGEOLOGIC SECTION

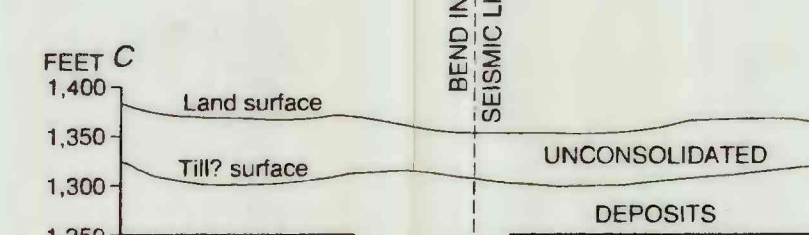
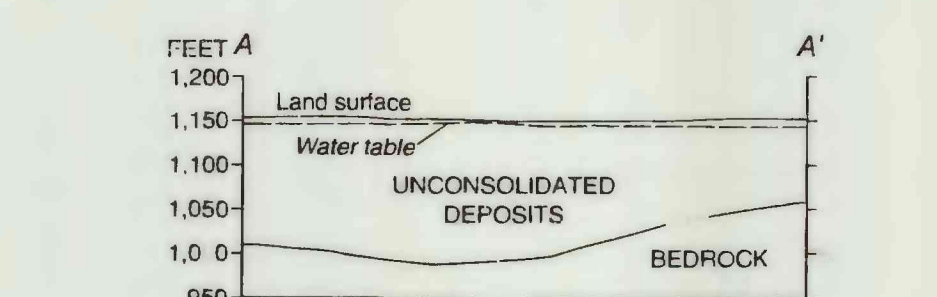
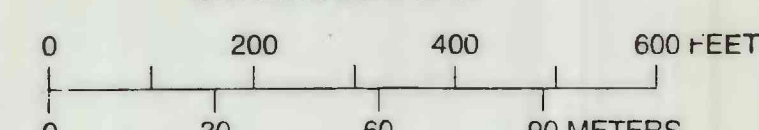
SCALE



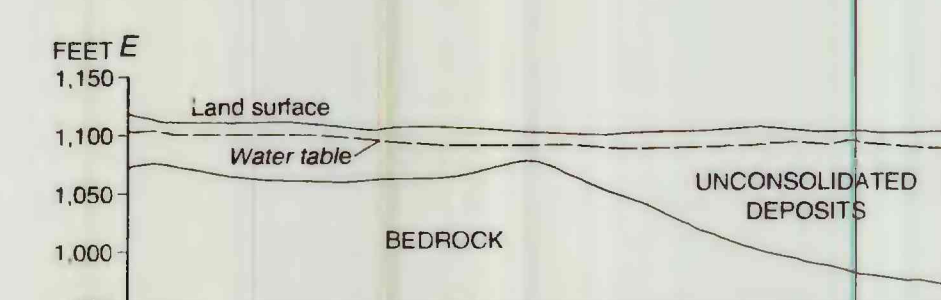
CONTOUR INTERVAL 10 FEET
DATUM IS SEA LEVEL

HYDROGEOLOGIC SECTIONS

ALL SECTIONS:
VERTICAL EXAGGERATION x 2
DATUM IS SEA LEVEL



NOTE: Typical bedrock velocities were not seen in seismic line. The estimated bedrock depth, based on interpretation of seismic refraction data by Hise (1988) range 15, ranges between 245 and 310 feet below land surface. A till layer about 50 feet thick could be present. A well 450 feet to the east taps saturated sand and gravel at about 100 feet below land surface.



NOTE: Well 800 feet to the east did not reach bedrock at 102 feet.

DISTRIBUTION AND THICKNESS OF UNCONSOLIDATED DEPOSITS IN SCHUYLER COUNTY, NEW YORK

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